Focus Report

New Chemicals Program

PMN Number: **L-13-0172**

Focus Date:	03/11/2013 12:00:00 AM	Report Status:	Completed
Consolidated Set:			
Focus Chair:	Kristan Markey	Contractor:	Bryan Amagai

I. Notice Information

Submitter:	Johnson Matthey Inc.
CAS Number:	306-98-9
Chemical Name:	Cyclohexane, 1,1,2,2,3,3,4,4,5,6-decafluoro-5,6-bis(trifluoromethyl)-
Use:	Tracer chemical to measure flow in deep oil-bearing strata or hydrocarbon leak measurements. Similar materials submitted [redacted]. P2 Claim: The LVE material is intended to replace radionuclide tracers. [redacted]
Other Uses:	[redacted]
PV-Max:	1,000 Kg/yr
Binding Option:	Yes
Manufacture:	
Import:	X

II. SAT Results

(1) **Health Rating:** 1-2 **Eco Rating:** 1 **Comments:** ;

Occupational: 2-3A **Non-Occupational:** 2 **Environmental:** 2

(1) **PBT:** 3 2 1 **Comments:**

Awaiting Human Health Entry
Awaiting Human Health Entry
Awaiting Human Health Entry

III. OTHER FACTORS

Categories:

Health Chemical Category:

Ecotox SAR and TSCA New Chemical Category: neutral organic chemicals; Neutral Organics

Related Cases/Regulatory History:

Health related Cases: [redacted]

Ecotox Related Cases: Same as [redacted] Analogs: [redacted]

Regulatory History: [redacted] - GRANTED WITH CONDITION
[redacted]) - GRANTED WITH CONDITION
[redacted] - GRANTED WITH CONDITION
- GRANTED WITH CONDITION
- GRANTED WITH LETTER
- GRANTED
- GRANTED WITH CONDITION
- WITHDRAWN - OTHER
- WITHDRAWN/FACE 5E
[redacted]
- GRANTED

[redacted] - GRANTED WITH CONDITION

MSDS/Label Information:

MSDS:	Yes	Label:	No
General Equipment:	No engineering controls or PPE for handling/use provided in MSDS.		
Respirator:	No repirator recommendations provided in MSDS.		
Health Effects:	No effects reported in MSDS.		
TLV/PEL (PMN or raw material):	- None Established		
LVEPPE:	Goggles, Impervious Gloves, Tyvek Suit		

Exposure Based Information:

Exposure Based Review:	N	Exposure Based Review (Health):	N
Exposure Based Review (Eco):	N	Exposure Based (Occupational):	No
Exposure Based Review (Non Occupatuional):		Exposure Based (Environmental):	

IV. Summary of SAT Assessment

Fate:

Fate Summary:

L-13-0172
FATE:
Liquid with MP = -22 C (M)
log Kow = 5.49 (E)
S = 0.067 mg/L at 25 C (E)
VP = 36 torr at 25 C (M)
BP = 102 C (M)
H = 5.66E+4 (E)
log Koc = 5.81 (E)
log Fish BCF = 3.29 (E)
log Fish BAF = 4.48 (E)
POTW removal (%) = 90-99 via sorption and stripping
Time for complete ultimate aerobic biodeg > mo
Sorption to soils/sediments = v.strong
Volatilization half-life from a standard river = 2 hrs
Volatilization half-life from a standard lake = 8 da
PBT Potential: P3B2
*CEB FATE: Migration to ground water = negl

Health:

Health Summary:

Absorption is poor all routes based on physical/chemical properties. The Standard Review for [redacted] supported a concern for neurotoxicity at high exposure levels. The Standard Review did not support concern for liver effects based on the lack of liver toxicity in the acute study submitted for [redacted] cardiac sensitization based on evidence in the literature that increasing the degree of fluorination of a chemical decreases the cardiac sensitization potential; developmental/reproductive toxicity because there were no close analogs that have been shown to cause developmental or reproductive toxicity. New information since the Standard Review for [redacted] shows that [redacted] is positive for cardiac sensitization in 1 of 6 dogs at 40% concentration in the air with no response at 30% concentration or less (8e-15740). This is not considered to be a close analog because it is much smaller than the LVE compound. A similar compound [redacted] is used [redacted]. The nonreactivity and chemical stability of perfluorocarbons lead to a concern about high global warming potential and long atmospheric lifetimes. Low moderate concern.

Ecotox:

Ecotox Values:

Fish 96-h LC50:	*(P)
Daphnid 48-h LC50:	*(P)
Green algal 96-h EC50:	*(P)

Fish Chronic Value:	*(P)
Daphnid ChV:	*(P)
Algal ChV:	*(P)

Ecotox values comments: Predictions are based on SARs for neutral organic chemicals; SAR chemical class = fluorocarbon; MW 400; log Kow ~ 6 (ACD); liquid with mp unknown (P); S < 0.001 mg/L at 25 C (P); pH7; effective concentrations based on 100% active ingredients and mean measured concentrations; hardness <180.0 mg/L as CaCO3; and TOC <2.0 mg/L;

Ecotox Factors:

Assessment Factor:	10
Concern Concentration: - Acute Value	
Concern Concentration: - Chronic Value	

V. Summary of Exposures/Releases

Engineering Summary: L-13-0172

Exposures/Releases	Release	Release	Release
Scenario	**Use: Injection of Tracer Chemical into Oil-Bearing Strata**	**Use: Injection of Tracer Chemical into Oil-Bearing Strata**	**Use: Injection of Tracer Chemical into Oil-Bearing Strata**
Sites	**1**	**1**	**1**
Media	**Incineration**	**Air**	**Water or Incineration or Landfill**
Descriptor A	Output 2	Typical	High End
Quantity A (kg/site/day)	2.0E+1	1.9E-2	1.2E-1
Frequency A (day/year)	50	50	50
Descriptor B		Worst Case	
Quantity B (kg/site/day)		3.9E-2	
Frequency B (day/year)		50	
From	Oil Production	Unloading Liquid Raw Material from Small Containers	Cleaning Liquid Residuals from Small Containers Used to Transport the Raw Material
Workers			
Exposure Type			

Engineering Summary: Exposures/Releases	Release	Release	Release
Scenario	**Processing: Repackaging/Formulation**	**Processing: Repackaging/Formulation**	**Processing: Repackaging/Formulation**
Sites	**1**	**1**	**1**
Media	**Water or Incineration or Landfill**	**Air**	**Air**
Descriptor A	Conservative	Typical	Typical
Quantity A (kg/site/day)	5.0E-1	4.9E-2	2.0E-2
Frequency A (day/year)	20	20	20
Descriptor B		Worst Case	Worst Case
Quantity B (kg/site/day)		9.8E-2	4.0E-2
Frequency B (day/year)		20	20
From	Equipment Cleaning Losses of Liquids from a Single, Small Vessel	Loading Liquid Product into 5 L Containers	Unloading Liquid Raw Material from Small Containers
Workers			
Exposure Type			

V. Summary of Exposures/Releases

Engineering Summary: L-13-0172

Exposures/Releases	Release	Release	Exposure
Scenario	**Processing: Repackaging/Formulation**	**Processing: Repackaging/Formulation**	**Use: Injection of Tracer Chemical into Oil-Bearing Strata**
Sites	**1**	**1**	**1**
Media	**Water or Incineration or Landfill**	**Air**	**Dermal**
Descriptor A	High End	Output 2	High End
Quantity A (kg/site/day)	3.0E-1	3.8E-1	7.1E+2
Frequency A (day/year)	20	20	50
Descriptor B			
Quantity B (kg/site/day)			
Frequency B (day/year)			
From	Cleaning Liquid Residuals from Small Containers Used to Transport the Raw Material	Cleaning Liquid Residuals from Small Containers Used to Transport the Raw Material	Unloading Liquid Raw Material from Small Containers
Workers			3
Exposure Type			Liquid

Engineering Summary: Exposures/Releases	Exposure	Exposure	Exposure
Scenario	**Use: Injection of Tracer Chemical into Oil-Bearing Strata**	**Processing: Repackaging/Formulation**	**Processing: Repackaging/Formulation**
Sites	**1**	**1**	**1**
Media	**Inhalation**	**Dermal**	**Inhalation**
Descriptor A	Worst Case	High End	Worst Case
Quantity A (kg/site/day)	5.6E+2	7.1E+2	1.4E+3
Frequency A (day/year)	50	20	20
Descriptor B	Typical		Typical
Quantity B (kg/site/day)	9.3E+0		2.4E+1
Frequency B (day/year)	50		20
From	Unloading Liquid Raw Material from Small Containers	Loading Liquid Product into 5 L Containers	Loading Liquid Product into 5 L Containers
Workers	3	3	3
Exposure Type	Vapor	Liquid	Vapor

V. Summary of Exposures/Releases

Engineering Summary: L-13-0172

Exposures/Releases	**Exposure**	**Exposure**	
Scenario	**Processing: Repackaging/Formulation**	**Processing: Repackaging/Formulation**	
Sites	**1**	**1**	
Media	**Dermal**	**Inhalation**	
Descriptor A	High End	Worst Case	
Quantity A (kg/site/day)	1.7E+3	5.7E+2	
Frequency A (day/year)	20	20	
Descriptor B		Typical	
Quantity B (kg/site/day)		9.5E+0	
Frequency B (day/year)		20	
From	Unloading Liquid Raw Material from Small Containers	Unloading Liquid Raw Material from Small Containers	
Workers			
Exposure Type	Liquid	Vapor	

VI. Focus Decision and Rationale

Regulatory Actions

Regulatory Decision: LVE Final Conditional Grant Decision Date: 03/11/2013
Type of Decision:

Rationale: L-13-0172 was given a final conditional grant based on binding to the production volume and the uses described in the PMN. Absorption is poor all routes based on physical/chemical properties. Human health hazard concerns were low-moderate based on cardiac sensitization. Workers are expected to be exposed via inhalation and dermal routes. Potential risks to workers were mitigated by appropriate PPE. Ecotoxicity hazard concerns were low based on EcoSAR predictions for neutral organics. Potential risks to the environment were low based on no effects expected at saturation. The submitter bound this LVE to 1,000 kg/yr, and EPA assessed it at this volume..

COC: No effects at saturation

Summary of Exposures and Releases

Proc
1 site, 20 days/year, 3 workers
Inhalation (Vapor): Typical: 2.4E+1 mg/day, Worst Case: 1.4E+3 mg/day
Inhalation (Vapor): Typical: 9.5E+0 mg/day, Worst Case: 5.7E+2 mg/day
Dermal: 7.1E+2 mg/day (40% Liquid)
Dermal: 1.7E+3 mg/day (98% Liquid)

Releases to Water: 5.0E-1 kg/site-day over 20 days/yr
Or Incineration or Landfill
Releases to Water: 3.0E-1 kg/site-day over 20 days/yr
Or Incineration or Landfill
Releases to Air: Typical: 4.9E-2 kg/site-day over 20 days/yr, Worst Case: 9.8E-2 kg/site-day over 20 days/yr
Releases to Air: Typical: 2.0E-2 kg/site-day over 20 days/yr, Worst Case: 4.0E-2 kg/site-day over 20 days/yr
Releases to Air: 3.8E-1 kg/site-day over 20 days/yr

Fate Releases to Air:
Stack Air: LADD: 4.34E-06 mg/kg/day ADR: 9.91E-04 mg/kg/day
Fugitive Air: LADD: 2.28E-05 mg/kg/day ADR: 1.30E-02 mg/kg/day

Fate Releases to Water (Removal Rate 90%):
SWC: 10.31 ppb
DW: LADD: 8.63E-07 mg/kg/day; ADR: 5.03E-04 mg/kg/day
FI: LADD: 7.14E-06 mg/kg/day, ADR: 7.01E-03 mg/kg/day

Use
1 site, 50 days/year, 3 workers
Inhalation (Vapor): Typical: 9.3E+0 mg/day, Worst Case: 5.6E+2 mg/day
Dermal: 7.1E+2 mg/day (40% Liquid)

Releases to Water: 1.2E-1 kg/site-day over 50 days/yr
Or Incineration or Landfill
Releases to Air: Typical: 1.9E-2 kg/site-day over 50 days/yr, Worst Case: 3.9E-2 kg/site-day over 50 days/yr
Releases via Incineration: 2.0E+1 kg/site-day over 50 days/yr

Fate Releases to Air:
Stack Air: LADD: 2.73E-04 mg/kg/day ADR: 2.57E-02 mg/kg/day
Fugitive Air: LADD: 4.29E-06 mg/kg/day ADR: 9.80E-04 mg/kg/day

Fate Releases to Water (Removal Rate 90%):
SWC: 11.32 ppb
DW: LADD: 1.15E-06 mg/kg/day; ADR: 5.17E-04 mg/kg/day
FI: LADD: 9.55E-06 mg/kg/day, ADR: 3.75E-03 mg/kg/day

P2 Rec Comments:

Testing:

Final Recommended:

Health:
Eco:
Fate:
Other:

SAT Report

PMN Number: **L-13-0172**
SAT Date: **2/26/2013**
Print Date: **6/3/2015**

Related cases:

Health related cases: [redacted]

Ecotox related cases: Same as [redacted] Analogs: [redacted]

Concern levels:

Type of Concern:	**Health**	**Eco**	**Comments**
Level of Concern:	1-2	1	

Persistence	**Bioaccum**	**Toxicity**	**Comments**
3	2	1	
		Awaiting Human Health Entry	
		Awaiting Human Health Entry	
		Awaiting Human Health Entry	

Exposure Based Review:

Health: No
Ecotox: No

Routes of exposure:

Health: Dermal Inhalation
Ecotox: No releases to water
Fate: ;

Keywords:

Keywords:

Summary of Assessment:

Fate:

Fate Summary: L-13-0172

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POTW removal (%) = 90-99 via sorption and stripping
Time for complete ultimate aerobic biodeg > mo
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Ecotox:

Test Organism	Test Type	Test End Point	Predicted	Measured	Comments
fish	**96-h**	**LC50**	*		
daphnid	**48-h**	**LC50**	*		
green algal	**96-h**	**EC50**	*		
fish	**_**	**chronic value**	*		
daphnid	**_**	**chronic value**	*		
algal	**_**	**chronic**	*		

		value			
Sewage Sludge	**3-h**	**EC50**	**_**		
Sewage Sludge	**_**	**Chronic Value**	**_**		

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Factors	**Values**	**Comments**
Assessment Factor	10	
Concentration of Concern (ppb) Acute		
Concentration of Concern (ppb) Chronic		*
SARs	neutral organic chemicals	
SAR Class	fluorocarbon	
TSCA New Chemcial Category	Neutral Organics	

Ecotox Factors Comments:

SAT Chair: Becky Jones
Fate assessor: **Ecotox assessor:** **Health assessor:**